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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,054	07/30/2003	Yuemei Yang	3006.001300/KDG	8193

23720 7590 11/17/2005

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EXAMINER
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RAETZSCH, ALVIN T

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/630,054	Applicant(s) YANG ET AL.	
	Examiner Alvin T. Raetzsch	Art Unit 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-311 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-311 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/30/03; 9/2/03</u> . | 6) <input type="checkbox"/> Other: _____  |

*Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 220 & 230-234 are rejected under 35 U.S.C. 102(e) as being anticipated by Resasco et al. (US 6,333,016).

Resasco et al. teaches producing single-wall carbon nanotubes using metal catalysts with a metal from group VIB and group VIII on a support of magnesium oxide and reacting it with a carbon containing gas stream.

*Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 5-219 & 235-311 are rejected under 35 U.S.C. 103(a) as being unpatentable over Resasco et al. (US 6,333,016) in view of Smalley et al. (US 6,761,870).

Resasco et al. teaches producing single-wall carbon nanotubes using metal catalysts with a metal from group VIB and group VIII on a support of magnesium oxide and reacting it with a carbon containing gas stream. Resasco does not teach the precursor steps or sulfiding the catalyst. Smalley et al. teaches the precursor steps and sulfiding an iron and molybdenum catalyst with thiophene.

It would have been obvious to someone of ordinary skill in the art to sulfide the catalyst as disclosed in the method taught by Resasco. It is a common practice in the catalyst art and improves properties of the catalyst. The similar process parameters and products of Resasco and Smalley strengthen the argument of obviousness.

Resasco also teaches the temperatures, ratios, particle sizes and nanotubes efficiency (see Table III, 94%).

Smalley et al. teaches the using catalyst precursor as disclosed by the applicant. In addition, the methods for preparing the catalyst precursors are product by process claims.

3. Claims 221-223 & 227-229 are rejected under 35 U.S.C. 103(a) as being unpatentable over Resasco et al. (US 6,333,016) as applied to claims 1, 220 & 230 above.

Resasco does not teach using fluidizing aid particles. It would have been obvious to anyone of ordinary skill in the art to use fluidizing particles to enhance the fluidization of a fluidized bed reactor.

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4. Claims 224-226 are rejected under 35 U.S.C. 103(a) as being unpatentable over Resasco et al. (US 6,333,016), as applied to claims 1, 220 & 230 above, in view of Yamada et al. (US 5,102,647).

Neither Resasco nor Smalley teach injecting the catalyst into the reactor counter-current to the flow of the gas streams. Yamada et al., however, does teach using a counter-current flow of catalyst particles (Column 3, lines 58-62). It would have been obvious to someone of ordinary skill in the art to use a counter-current flow method in order to increase the contact efficiency of the reactants and catalyst particles. It is also obvious to anyone of ordinary skill in the art to use fluidizing particles to enhance the fluidization of a fluidized bed reactor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alvin T. Raetzsch whose telephone number is 571-272-8164. The examiner can normally be reached on 9-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alvin T Raetzsch

STUART L. HENDRICKSON  
PRIMARY EXAMINER